CLAIMS

1. A negative electrode for lithium secondary batteries, comprising a negative active material and a binder,

wherein the negative active material comprises graphite A and graphite B,

shapes of primary particles of the graphite A are spherical or elliptical,

an average particle diameter of the primary particles of the graphite A ranges between 10 μm and 30 μm inclusive,

sizes of crystallites of the graphite A in a direction of a c-axis are smaller than 100 nm and tap density of the graphite A is 1.0 g/cm^3 or higher,

shapes of primary particles of the graphite B are flat,

an average particle diameter of the primary particles of the graphite B ranges between 1 μm and 10 μm inclusive, and

sizes of crystallites of the graphite B in a direction of a c-axis are 100 nm or larger.

2. The negative electrode for lithium secondary batteries according to Claim 1, wherein at least a part of surfaces of the graphite A is further covered with non-graphite carbon.

3. The negative electrode for lithium secondary batteries according to Claim 1,

wherein, I_{1350} denotes Raman intensity at approximately 1350cm^{-1}, I_{1580} denotes Raman intensity at approximately 1580cm^{-1} and a R-value of Raman spectrum is obtained by a formula: $R=(I_{1350}/I_{1580})$,

a R-value of Raman spectrum of the graphite A is 0.4 or larger when the graphite A is excited by an Ar laser with a wavelength of 5145 Å.

4. The negative electrode for lithium secondary batteries according to Claim 1, wherein the primary particles of the graphite B aggregate or bond so as to form secondary particles, and an average particle diameter of the secondary particles ranges between 10 μm and 30 μm inclusive.

5. The negative electrode for lithium secondary batteries according to Claim 1, wherein a weight proportion of the graphite A ranges between 10 wt% and 90 wt% inclusive, with respect to a sum weight of the graphite A and the graphite B.

6. The negative electrode for lithium secondary batteries according to Claim 1, wherein the binder comprises a mixture of an aqueous resin and a rubber-based resin.

7. A method for manufacturing a negative electrode for lithium secondary batteries comprising the steps of:

preparing graphite A of which shapes of primary particles are spherical or elliptical, an average particle diameter of the primary particles ranges between 10 μm and 30 μm inclusive, sizes of crystallites in a direction of a c-axis are smaller than 100 nm, and tap density is 1.0 g/cm^3 or higher;

preparing graphite B of which shapes of primary particles are flat, an average particle diameter of the primary particles ranges between 1 μm and 10 μm inclusive, and sizes of crystallites in a direction of a c-axis are 100 nm or larger;

preparing paint by mixing the graphite A and the graphite B in the presence of a binder and a solvent; and

applying the paint on a collector, drying the paint and then performing a pressure forming treatment.

8. The method for manufacturing the negative electrode for lithium secondary batteries according to Claim 7, wherein at least a part of surfaces of the graphite A is further covered with non-graphite carbon.

9. The method for manufacturing the negative electrode for lithium secondary batteries according to Claim 7,

wherein, I_{1350} denotes Raman intensity at approximately 1350cm^{-1}, I_{1580} denotes Raman intensity at approximately 1580cm^{-1} and a R-value of Raman spectrum is obtained by a formula: $R=(I_{1350}/I_{1580})$,

a R-value of Raman spectrum of the graphite A is 0.4 or larger when the graphite A is excited by an Ar laser with a wavelength of 5145 Å.

10. The method for manufacturing the negative electrode for lithium secondary batteries according to Claim 7, wherein the primary particles of the graphite B aggregate or bond so as to form secondary particles, and an average particle diameter of the secondary particles ranges between 10 μm and 30 μm inclusive.

11. The method for manufacturing the negative electrode for lithium secondary batteries according to Claim 7, wherein a weight proportion of the graphite A ranges between 10 wt% and 90 wt% inclusive, with respect to a sum weight of the graphite A and the graphite B.

12. The method for manufacturing the negative electrode for lithium secondary batteries according to Claim 7, wherein the binder comprises a mixture of an aqueous resin and a rubber-based resin.

13. A lithium secondary battery, comprising a positive electrode, a negative electrode and nonaqueous electrolyte,

wherein the negative electrode comprises a negative active material

REPLACED BY ART 34 AMDT

and a binder,

the negative active material comprises graphite A and graphite B,

shapes of primary particles of the graphite A are spherical or elliptical,

an average particle diameter of the primary particles of the graphite A ranges between 10 μm and 30 μm inclusive,

sizes of crystallites of the graphite A in a direction of a c-axis are smaller than 100 nm and tap density of the graphite A is 1.0 g/cm^3 or higher,

shapes of primary particles of the graphite B are flat,

an average particle diameter of the primary particles of the graphite B ranges between 1 μm and 10 μm inclusive, and

sizes of crystallites of the graphite B in a direction of a c-axis are 100 nm or larger.

14. The lithium secondary battery according to Claim 13, wherein at least a part of surfaces of the graphite A is further covered with non-graphite carbon.

15. The lithium secondary battery according to Claim 13,

wherein, I_{1350} denotes Raman intensity at approximately 1350cm^{-1}, I_{1580} denotes Raman intensity at approximately 1580cm^{-1} and a R-value of Raman spectrum is obtained by a formula: $R=(I_{1350}/I_{1580})$,

a R-value of Raman spectrum of the graphite A is 0.4 or larger when the graphite A is excited by an Ar laser with a wavelength of 5145 Å.

16. The lithium secondary battery according to Claim 13, wherein the primary particles of the graphite B aggregate or bond so as to form secondary particles, and an average particle diameter of the secondary particles ranges between 10 μm and 30 μm inclusive.

17. The lithium secondary battery according to Claim 13, wherein a weight proportion of the graphite A ranges between 10 wt% and 90 wt% inclusive, with respect to a sum weight of the graphite A and the graphite B.

18. The lithium secondary battery according to Claim 13, wherein the binder comprises a mixture of an aqueous resin and a rubber-based resin.